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10/508,764	09/22/2004	Son Nguyen-Kim	258177US0PCT	7921
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER BARHAM, BETHANY P	
			ART UNIT 1615	PAPER NUMBER
			NOTIFICATION DATE 10/22/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/508,764	Applicant(s) NGUYEN-KIM ET AL.	
	Examiner BETHANY BARHAM	Art Unit 1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/16/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

Receipt of Applicant's Amended Claims and Response filed on 6/16/08 are acknowledged. Claims 1-20 are pending. Claims 1-20 are rejected.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/16/08 has been entered.

Response to Applicant

Examiner thanks Applicant's compliance with MPEP 609.04 namely "if the concise explanation is part of the specification, the IDS listing should include the page(s) or line(s) numbers where the concise explanation is located in the specification", as such documents AP and AU (12/22/04) and AU (09/22/04) have now been considered to the extent that each is sparingly described in the instant specification. (DE 3929973 (document AP in the IDS filed December 22, 2004) is described in the specification at page 22, lines 1-3; Fikentscher (document AU in the IDS filed December 22, 2004) is described in the specification at page 20, lines 17-21. WO 01/16200 (document AU in the IDS filed September 22, 2004) is described in the specification at page 4, line 9

Art Unit: 1615

through page 5, line 2). It should be noted that the Examiner is still unable to determine how K was calculated according to Fikentscher above since the entire document is in German and Applicant does not disclose in the instant specification any type of formula for K.

NEW REJECTIONS

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Amended claim 1 claims “a molar ratio of compounds having only two active hydrogens to compounds having only three active hydrogens of at least $(15 \frac{2}{3}):1$ ”, which is from the instant specification Example 6 that requires also requires 1000 PEG (E) however, in the instant claims (E) can be 0%. Thus, Applicant has not established that he was in possession of the claimed ranges for this claimed ratio. Example 6 further requires a poly-THF of a specific m.w. 1000 (A) component, and an exact amount of each component A-E, not ranges. Also, (C) and (E) have “at least 2” active hydrogens, not “only 2” as specified in the amended portion of claim 1. This is a new matter rejection.

MAINTAINED REJECTIONS

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,992,507 ('507).

The limitations of claims 1-6 are taught:

- '507 in Example 20 teaches a polyurethane comprising PTMEG (T-1000), (which is polyTHF 1000 molecular weight, instant component A), dispersing diol (instant E), trimethylolpropane (instant component B), N-methyl diethanolamine (instant component C) and Isophorone diisocyanate (instant component D). The molar ratio (Example 20) calculated of compounds having only two active hydrogen atoms per molecule to compounds having only 3 active hydrogen atoms per molecule is (30.65):1, which is at least 15 2/3:1 instant claimed. Also see Examples 1-9, which teaches a PPO-diol or polyTHF and further trimethylolpropane, DMPA (Dimethylolpropionic acid), isophorone diisocyanate, a dispersing diol and diethanol amine. The Examples teach varying the amounts of DMPA, IPDI, etc.

Art Unit: 1615

- Furthermore, the polyurethane of '507 comprises various diisocyanates including hexamethylene and isophorone (col. 2, line 67-col. 3, line 1), diols and triols (col. 3, lines 13-15) preferred dimethylolpropionic acid (col. 6, line 8), polyols specifically, neopenyl glycol, trimethylolpropane, pentaerythritol, etc (col. 4, lines 1-3). Dimethylolpropionic acid, trimethylolpropane, isophorone diisocyanates, and diols are preferred and used in the examples 2, 8-9 and 19-20 (Also see claims 1, 7, 9-11).

The limitations of claims 7-10 and 14-15 are taught:

- '507 teaches an aqueous dispersion of polyurethane, which is useful as coating compositions (abstract). '507 teaches that polyurethanes are well-known as being useful for coatings and films (col. 1, line 13-15), and furthermore teaches that they may be employed as adhesives, binding agents, and coating compositions to be applied to any substrate, including wood, metals, glass, cloth, leather, paper, plastics, foam and the like, with various ingredients such as emulsifiers, organic solvents, etc added (col. 7, lines 45-66).
- Example 20 is taught above and teaches a polyurethane comprising (of solids) 38.7% PTMEG (T-1000) (instant component A), 1% trimethylolpropane (instant component B), 2.8% N-methyl diethanolamine (instant component C) and 34.3% Isophorone diisocyanate (instant component D). Furthermore, the composition is a dispersion comprising 35% polymer and 75% solvents. While Examples 8-9 teach other percentages of the same components can be used.

The limitations of claims 11-13 are taught:

Art Unit: 1615

- '507 teach 250 and 1000 molecular weight poly-THF (Example 9, and 20

The limitations of claims 16-20 are taught:

- '507 teaches a ratio of active hydrogens to NCO groups of 1.0 to 2.0:1 (which overlaps with the instant claimed ranges in claim 16-17 (col. 7, lines 36-40).
- '507 teaches adding an amine to end the reaction by reacting with the remaining isocyanate (see Examples, and col. 9, lines 5-9).
- '507 does not teach a K value or glass transition temperature or the claimed range for component C for the formed polyurethane.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to look to '507 in order to make a polyurethane of the instant invention. '507 teaches the same reactants to make a polyurethane, with substantially overlapping ranges and values or values near percentages as instant claimed for all components. One of ordinary skill in the art would know how to optimize the ranges of '507, as the MPEP 2144.05 states "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." Further, the prior art teaches a composition and process for forming said composition described by applicants instant application, but applicants observation that it also has specific K value and glass transition temperature does not give it patentable weight, since it is the same composition and same process of making, as adding a characterization to a prior art patented invention is not patentable.

Claims 1-3, 5, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,992,507 ('507) in view of 6,524,564 ('564).

The limitations of claims 1-3 and 5 are taught:

- '507 is taught above.
- '507 does not teach that 3 mol% of triisocyanates can be optionally included.
- '564 teaches a polyurethane composition (see abstract, claim1): includes triols and triamines, trimethylolpropane is taught as a triol (col. 6, lines15-16 and col. 5, line 13-14, instant B); (b) includes diisocyanates such as hexamethylene diisocyanate, isophorone diisocyanate and 3 mol% of triisocyanates (col. 6, lines 5-10, instant D); (c) includes molecular weights of 500-3000 of polyetherols such as polytetrahydrofurans (col. 6, lines 31-40, instant A); (d) includes polysiloxanes (col. 7, lines 45-47, instant E); (e) includes diamines or diols such as dimethylolpropanoic acid (col. 10, lines 48-50, instant C).

A reference is analyzed using its broadest teachings. MPEP 2123 [R-5].

"[W]hen a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious". KSR v. Teleflex, 127 S.Ct. 1727, 1740 (2007)(quoting Sakraida v. A.G. Pro, 425 U.S. 273, 282 (1976)). "[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious", the relevant question is "whether the improvement is more than the predictable use of prior art elements according to their established functions." (Id.).

Addressing the issue of obviousness, the Supreme Court noted that the analysis under

Art Unit: 1615

35 USC 103 “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” KSR v. Teleflex, 127 S.Ct. 1727, 1741 (2007). The Court emphasized that “[a] person of ordinary skill is... a person of ordinary creativity, not an automaton.” Id. at 1742.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of ‘507 in view of ‘564. ‘507 teaches a polyurethane as instant claimed with the specific reactants such as hexamethylene and isophorone diisocyanate, while ‘564 teaches making a polyurethane prepolymer with substantially the same reactants and further the specific diisocyanate reactants which can be replaced by up to 3 mol% triisocyanate. As such one of ordinary skill in the art would know that triisocyanates can be substituted for diisocyanates up to 3 mol% in polyurethane formation.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,992,507 ('507) in view of US 6,566,438 B1 ('438).

- ‘507 is taught above.
- ‘507 does not teach the claimed range of component C in the instant application.
- ‘438 teaches a polyurethane coating composition comprising (see abstract, claim 1, Example B):
 - (instant A) 2-20% polyTHF (col. 3, lines 10-11),
 - (instant B) 0.5-5% trimethylolpropane (col. 4, line 64),

- (instant C) 0.5-3% preferably dimethylolpropionic acid (col. 5, line 19) and 0.15-1.5% methyl-diethanolamine (col. 6, line 32) and 0.1-1% polyamines like ethylenediamine (col. 6, line 52) for a total of 5.5%,
- (instant D) 2-20% isocyanate in particular IPDI (col. 5, lines 56-59),
- and (instant E) father components.

It would have been obvious to one of ordinary skill in the art at the time the invention was made that the polyurethane coating composition '507 could be made with the above claimed components in varying percentages overlapping with applicants as shown by '438. One of ordinary skill in the art would know how to optimize the ranges of '507 and '438, as the MPEP 2144.05 states "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." '507 and '438 teach the exact compounds claimed in the instant application and the % weight of components overlap or are near to the amount claimed by applicants such that one of ordinary skill in the art would know how to experiment to obtain workable ranges.

Response to Arguments

Applicant's arguments with respect to claims 1-20 have been considered but not persuasive and are moot in view of the new rejections necessitated by Applicant's amendment. Applicant's argue that the 103 rejection over '507 in view of '438 may

Art Unit: 1615

overlap with some of the components but that the specific recited amounts of components A-E and A-E itself is not embodied, and the amount of crosslinking is not taught in the art. First with respect to crosslinking, the Examiner respectfully points out that the art teaches including trimethylolpropane ((B), a triol) which will crosslink the polyurethane to some degree and the range of the art is well within the range of (B) instant claimed. Trimethylolpropane has the same functionality when used in formulating a polyurethane and since the instant claims are not directed to a specific degree of crosslinking nor has Applicant provided a factual showing of evidence to prove that the degree of crosslinking is any different, the polyurethane of the prior art is crosslinked. Applicant also argues that the instant invention is obtained in a single step reaction rather than the 2-step reaction of '507 followed by further post-crosslinking. The fact that the polymer of Example 20 '507 is formed with the same components in two steps with the trimethylolpropane functioning to crosslink the polyurethane and is then further crosslinked is not a teaching away from the initially formed crosslinked polyurethane. Applicant has not claimed a specific percentage of crosslinking of the polyurethane and as such the composition of '507 is crosslinked by the presence of trimethylolpropane and meets the limitations of the claims.

Also, the Examiner respectfully points out that A-E components are taught in the above Examples and cited sections of '507. The Examiner points out that many of the components A-E are taught in values that are found within the ranges instant claimed by Applicants. The molar ratio (Example 20 '507) calculated of compounds having only two active hydrogen atoms per molecule to compounds having only 3 active hydrogen

Art Unit: 1615

atoms per molecule is (30.65):1, which is at least $15 \frac{2}{3}$:1 instant claimed. Thus the prior art of record teaches a crosslinked polyurethane comprising the same monomers as instant claimed and producing a molar ratio that is within the instant claimed ratio and the rejections of record are hereby maintained.

Applicant's also argue motivation to combine '507 and '564 and that '564 does not cure the deficiencies of '507. '564 is only relied upon to show that it is known in the art to substitute a portion of the diisocyanate for 3 mol% of triisocyanates in a polyurethane and such a substitution or rearrangement of known components by a skilled artisan would yield nothing less than a predictable result of a crosslinked polyurethane of '507. Applicants argue that that at most the art '507 in view of '438 teaches 4.5% of component C, however this is incorrect, as shown above the total is in fact 5.5% ($3 + 1.5 + 1$). One of ordinary skill in the art would know how to optimize the ranges of '507 and '438, as the MPEP 2144.05 states "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." '507 teaches varying component C (DMPA), while '438 teaches that 3 different reactants all meeting component C can be added to a urethane polymer, these general conditions and the fact that components A-B and D-E are taught in the instant claimed ranges and the instant claimed molar ratio of at least $(15 \frac{2}{3})$:1, meet the terms of obviousness.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bethany Barham whose telephone number is (571)272-61755. The examiner can normally be reached on M-F, 8:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bethany Barham
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/Michael P Woodward/
Supervisory Patent Examiner, Art Unit 1615